

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Revisions to Rules Authorizing the Operation)	
of Low Power Auxiliary Stations in the 698-)	
806 MHz Band)	WT Docket No. 08-166
)	
Public Interest Spectrum Coalition, Petition for)	
Rulemaking Regarding Low Power Auxiliary)	
Stations, Including Wireless Microphones, and)	
the Digital Television Transition)	WT Docket No. 08-167
)	
Amendment of Parts 15, 74 and 90 of the)	
Commission's Rules Regarding Low Power)	
Auxiliary Stations, Including Wireless)	
Microphones)	ET Docket No. 10-24

COMMENTS OF AUDIO-TECHNICA U.S., INC.

Audio-Technica U.S., Inc.
1221 Commerce Dr.
Stow, OH 44224
330-686-2600

Bennet & Bennet, PLLC
4350 East West Highway
Suite 201
Bethesda, MD 20814
202-371-1500

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Summary

A-T fully supports the Commission's proposal to authorize wireless microphones to operate on an unlicensed basis pursuant to Part 15 of the rules. Authorizing unlicensed microphone use under Part 15 of the rules will allow the Commission's regulations to reflect current marketplace realities and provide a framework for effectuating future changes to spectrum policies that affect such devices. Since the majority of unlicensed wireless Audio devices ("WADs") that are currently in use have already been designed and produced to comply with Part 74 standards, having Part 15 technical standards mirror those in Part 74 will allow manufacturers to re-certify equipment for part 15 compliance in a rapid, efficient and cost effective manner. It will also allow the Commission to realize administrative efficiencies as well. Additional requirements such as spectrum sensing and geolocation capabilities, are not technically feasible for Part 15 WADs due to limitations on battery technology and adjacent channel specifications are unnecessary.

A-T supports recertification for equipment that will be marketed for use under Part 15 subject to a reasonable transition period. The certification process can also be used to clear up significant confusion that has arisen over the years in the context of unlicensed use of devices authorized for licensed use under Part 74. In addition to the disclosures and labels that are currently required, additional disclosures on equipment packaging and user manuals to inform purchasers not only of the limitations of Part 15 devices but also about FCC licensing requirements and database registration procedures under Part 74 should be considered. The Commission should continue to place licensing and compliance responsibility on the ultimate users of these products and not the manufacturers who do not have the capability or resources to monitor end user compliance.

Finally, the Commission should expand licensing eligibility for wireless microphone users. This can be done by expanding the class of Part 74 eligibles to include the additional categories of eligibles set forth in Part 90 of the rules. Additionally, Part 90 licensing could be made a more useful option for many of the current wireless microphone applications that do not require premium professional quality audio by permitting frequency offsets for current part 90 frequencies and by allowing Part 90 eligibles to operate in the core television band on a co-secondary basis.

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Audio-Technica U.S., Inc. ("A-T") submits these comments in response to the Commission's *Report and Order and Further Notice of Proposed Rulemaking*, released on January 15, 2010, in the above-captioned proceeding.¹ In the *Further Notice*, the Commission has sought comment on: 1) whether to permit wireless microphones and other low power audio devices in the core TV bands to operate on an unlicensed basis under Part 15 of the rules by entities that are not currently eligible for licensing under Part 74, Subpart H of the rules; 2) whether to adopt technical standards for Part 15 operations patterned on Part 74 standards but at

¹ *In the Matter of Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band; Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition; Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones*, WT Docket Nos. 08-166, 08-167, ET Docket No. 10-24, Report and Order and Further Notice of Proposed Rulemaking and Order, FCC 10-16 (rel. January 21, 2008) ("*Order/Further Notice*").

reduced power levels; 3) whether to expand Part 74 licensing eligibility; and 4) whether to adopt marketing and labeling requirements applicable to Part 15 and Part 74 devices. The *Further Notice* also requests comments on possible long term solutions that would allow wireless microphones to operate more efficiently and with improved immunity to interference from other devices and asks whether Part 90 of the Commission's rules could be revised to better facilitate wireless microphone use.

I. INTRODUCTION

A-T has been dedicated to advancing the art and technology of electro-acoustic design and manufacturing since 1962. From a beginning in state-of-the-art phonograph cartridges, A-T has expanded over the years into the design and manufacture of high-performance headphones, microphones, mixers and electronic products for home and professional use. In each new area, the company's goal has been to create innovative, problem-solving products. The results of these engineering and production efforts can be seen in the effective use of A-T products in a broad spectrum of applications. Audio-Technica microphones, for example, are found in daily use in major broadcast and recording studios, and relied upon by top touring musicians. A-T microphones are chosen for important installations and major events, such as the U.S. House of Representatives, the U.S. Senate, the Super Bowl, World Cup Soccer and the Olympics.

A-T does not market or sell its product line directly to consumers. Rather, its professional products are sold to broadcast supply houses, high end professional contractor/installers, professional music stores, catalogs and on-line sites and distributors. A-T's wireless microphone products sold through mass market retailers include only products operating

on frequencies available for Part 90 eligibles (sometimes referred to as “traveling frequencies”).² All sales to different distribution channels are directed through a network of independent representatives. These representatives, stores, and distributors are not in any way affiliated with, or controlled by A-T, nor do they sell A-T products exclusively. A-T’s contact with the end users of its wireless microphone products normally arises in the context of a need for service or a request from an end user for assistance in coordinating frequency plans for 10-15 systems in simultaneous use and for large events such as the Super Bowl, the Grammy’s, the Olympics and other prime-time broadcast events where the requirement for simultaneous channels in use at one time in near proximity often exceeds 40 units. FCC licensing of end user wireless microphones is not within the services or product support that A-T provides.

A-T has been an active participant in the Commission’s pending proceeding to allow unlicensed devices to operate within the television white spaces.³ A-T has supported allowing unlicensed operations on vacant television broadcast spectrum so long as the Commission ensures that the particular interference vulnerabilities of broadcast low power auxiliary stations within the Broadcast Auxiliary Service, including wireless microphones, are taken into account and fully addressed. A-T has also responded to the FCC’s desire to develop technology solutions

² Section 90.265(b) of the Commission’s rules lists eight frequencies available for wireless microphone use by Part 90 eligibles between 169.445 MHz and 171.905 MHz. Under section 90.35 of the rules, such eligibility extends to: 1) operation of any commercial activity; 2) operation of educational, philanthropic, or ecclesiastical institutions; 3) clergy activities; and 4) operation of hospitals, clinics, or medical associations. Paragraph 151 of the *Further Notice* requests comment on wireless microphone use under Part 90.

³ See e.g., Comments of Audio-Technica U.S., Inc. submitted in ET Docket Nos. 04-186 and 02-380 (filed November 29, 2004); Reply Comments of Audio-Technica U.S., Inc. submitted in ET Docket Nos. 04-186 and 02-380 (filed March 2, 2007).

that will allow unlicensed wireless devices to successfully operate without disrupting existing licensed services and has invested millions of dollars in the research, development, production and launch of the world's first ultra wide band ("UWB") digital wireless microphone. A-T undertook this development effort nearly concurrently with the cessation of 700MHz product development in anticipation and support of the FCC's goals and policies.

II. PART 15 OPERATION AND TECHNICAL STANDARDS.

The Commission has requested comment on its proposal to allow unlicensed wireless microphones to operate as Wireless Audio Devices ("WADs") under Part 15 of its rules and asks commentors to address a number of specific issues related to technical standards, equipment certification and product labeling. Specifically, the Commission has proposed to adopt the same technical standards that apply to wireless microphones that are licensed under Part 74 of the Commission's rules except that Part 15 WADs would be limited to an output power of 50 mW. The Commission proposes to delegate authority to its Office of Engineering and Technology ("OET") to entertain waiver requests to allow for operation at increased power in individual cases where the public interest would be served.

A-T fully supports the Commission's proposal to authorize wireless microphones to operate on an unlicensed basis pursuant to Part 15 of the rules. The record in this proceeding conclusively demonstrates that wireless microphones, ear monitors, hearing assist devices and similar communications systems have become pervasive in our society. On a daily basis, wireless microphones support and make possible a broad range of high quality services to the public. Broadcasters, television and movie producers, theatres, concert halls, educational institutions, places of worship, businesses, and entertainment companies make extensive use of

wireless microphones and the ubiquity of wireless microphone use reflects both the immense public benefits that such applications provide and the fact that such benefits are provided without interfering with other communications services and products. Authorizing unlicensed microphone use under Part 15 of the rules will allow the Commission's regulations to reflect current marketplace realities and provide a framework for effectuating future changes to spectrum policies that affect such devices.

A-T also fully supports the Commission's proposal to apply to Part 15 WADs the technical standards developed for Part 74 wireless microphones (albeit with a 50 mW output power limitation). The majority of unlicensed WADs that are currently in use have already been designed and produced to comply with Part 74 standards. If different technical standards are now adopted for unlicensed users, some method would have to be developed for dealing with the large embedded base of unlicensed devices that are currently deployed and in use throughout the country. A-T believes that the costs of doing so would be high while the corresponding benefits, if any, would be low, especially in light of the fact that these devices have been operated successfully over a number of years on an unlicensed basis without causing harmful interference to other products and services.

The benefits of adopting Part 74 technical standards (apart from output power) for wireless microphones operating as unlicensed WADs under Part 15 are manifest. The Commission is correct in its assumption that Part 74 devices are routinely operated at power levels that do not exceed the 50 mW output power limitation proposed by the Commission for Part 15 devices. For this reason, there are hundreds of different makes and models of Part 74 compliant wireless microphones on the market today that meet the Commission's proposed 50

mW power limitation for Part 15 WADs. Accordingly, adopting the remaining Part 74 technical standards unchanged for Part 15 devices will make it easier and less costly for manufacturers to quickly and seamlessly provide wireless microphones to unlicensed end users that meet suitable performance and price requirements and, on a going forward basis, it will make it easier and less costly for end users to transition between licensed and unlicensed use based on changing needs and circumstances.

The adoption of Part 74 technical standards for unlicensed Part 15 devices will also make it easier and more cost effective for equipment manufacturers to re-certify existing wireless microphone models for Part 15 use. A-T fully supports the Commission's proposal to require any WADs that have been certified under the procedures adopted for Part 74 devices to undergo recertification if they will be marketed for operation under Part 15. However, A-T is concerned that if the Commission were to adopt revised technical specifications for Part 15 WADs, this could require complete redesign and retesting of substantial numbers of WAD product lines that would impose significant costs and time delays upon manufacturers, consumers and Commission staff.

A-T also agrees with the Commission's tentative conclusion that it would be inappropriate to require WADs to incorporate spectrum sensing and other capabilities that are being imposed on unlicensed devices that the Commission recently authorized to operate in the so-called TV Band "White Spaces."⁴ The addition of search and detect and geolocation

⁴ See *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 02-380, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008) ("TV White Spaces Second Report and Order") *recons. pending*.

capabilities to WADs would be highly cost prohibitive and could not be supported based on current battery technology. Such capabilities would severely drain limited battery power needed for WAD operations and would shorten battery life to the point where a WAD would become unusable in a typical application or configuration. Given the large embedded base of wireless microphones and their history of interference free operations, any such requirement could not be justified in light of the substantial costs and operational limitations involved.

For the similar reasons, there is no need for the Commission to adopt adjacent channel technical specifications with respect to WAD operation on channel 51. Operational experience with wireless microphone deployment has demonstrated that these devices have not caused interference with adjacent channel licensed operations. Indeed, in the *Second White Spaces Order*, the Commission prohibited newly authorized TV Band White Spaces devices from operating on the first available channel on either side of channel 37 in the 13 metropolitan areas where the Private Land Mobile and Commercial Mobile Radio Services are permitted to operate on channels 14-20. The purpose of this prohibition was to leave these channels open as a safe harbor for wireless microphones in markets where there channels 14-20 might not be available for wireless microphone use due to spectrum congestion. In doing so, the Commission's decision implicitly recognizes that, in markets where the safe harbor channels include channels 36 or 38, adjacent channel wireless microphone operations would not be expected to interfere with authorized operations on channel 37, which is allocated for non-broadcast radio astronomy and wireless medical telemetry purposes nationwide. For the same reason, there should be no significant interference concerns regarding possible adjacent channel operation by WADs on channel 51.

III. EQUIPMENT CERTIFICATION

The Commission has requested comment on its proposal to require re-certification of WADs that are marketed for unlicensed operation under Part 15. A-T fully supports this proposal and believes that the addition of product labeling and disclosure requirements for both Part 74 and Part 15 WADs will reduce consumer confusion and promote spectrum sharing between WADs and other unlicensed devices in the TV White spaces.

As indicated above, A-T believes that harmonizing the technical standards applicable to Part 15 WADs with existing standards applicable to Part 74 licensed equipment will minimize the burden that recertification would otherwise place on both equipment manufacturers and the FCC. Given the volume of different equipment models that will have to be recertified, A-T suggests that a 2 year transition period be established. During the two year period, equipment manufacturers could continue to sell Part 74 approved equipment, provided that the equipment is properly labeled with the consumer disclosure the Commission has already adopted. After the transition period, equipment could only be marketed for unlicensed use only if it carried a Part 15 certification label.

As noted in the *Further Notice*, Part 15 intentional radiators currently must be labeled with a statement indicating that they may not cause harmful interference and must accept any interference received. In addition, the user manual for a Part 15 intentional radiator must contain a statement advising the user that unauthorized modifications could void the user's authority to operate the device. The Commission's rules currently do not require any additional labeling or any user manual information for Part 74 low power auxiliary stations and have no additional marketing requirements specific to these devices. A-T believes that the current

proceeding presents an opportunity to clear up the significant amount of consumer confusion that has arisen over the years in the context of unlicensed use of devices that were authorized for use under the Part 74 licensing regime.

Initially, A-T believes that the current labeling requirements applicable to Part 15 devices, as supplemented by the Commission's recent consumer alert information, is sufficient for devices that do not exceed an output power level of 50 mW with one exception. Assuming that the Commission adopts Part 74 technical standards for Part 15 devices, A-T believes that most, if not all such devices will be certified for operation under both rule parts. In cases of such dual certification, additional language could be added to the user manuals for such devices indicating that if the user is eligible for and obtains an FCC Part 74 license, it may be entitled to some level of interference protection from other unlicensed licensed devices provided it complies with database registration requirements. The manual could direct the consumer to contact the FCC or a certified audio professional to obtain further information on FCC licensing and database registration.

With respect to those devices that are certified for Part 74 use only, A-T agrees that product packaging and owner manuals should clearly state that the product is intended for use only pursuant to an FCC license and may not lawfully be used without one. The disclosure should warn users that they could be subject to monetary fines and/or other administrative sanctions if the product is used without an FCC license. However, A-T opposes the suggestion in the *Further Notice* that would require manufacturers to ensure that Part 74 certified devices are marketed only to part 74 eligibles and to impose recordkeeping requirements that would require manufacturers, such as A-T, not only to keep records on all ultimate purchasers of these products

but also to undertake some sort of due diligence to ensure that the purchaser either obtained or is eligible to obtain a Part 74 FCC license.

As indicated above, A-T does not sell any product directly to consumers and distributes its product through broadcast supply houses, high end professional contractor/installers, professional music stores, catalogs and on-line sites and independent distributors. A-T does not (nor could it afford to) trace the sale of every wireless product to determine whether the ultimate purchaser meets FCC eligibility requirements for a license, and the FCC's rules have never imposed any such obligation upon it to do so. Nor have the FCC's rules imposed any obligation on equipment manufacturers to obtain FCC licenses for their users. Users are, and always have been, responsible for obtaining their own licenses and that is the universal norm across all licensed services. There already exists an infrastructure of attorneys, consultants and sound professionals that are equipped to counsel and assist consumers FCC compliance issues. Manufacturers such as A-T simply do not have the ability or the resources to keep records on transactions that occur far downstream in the distribution chain or to monitor the actions of the ultimate product consumers.

Finally, the FCC has asked whether its equipment certification rules should prohibit component parts such as amplifiers from being attached after market to a microphone. A-T does not believe that such a prohibition is necessary. Based on its extensive experience involving various types of large scale venues where Part 74 licensed microphones are deployed, there are site specific situations where amplifiers have been and will continue to be required. In such cases, licensees have been able to seek and obtain special temporary authority ("STA") from OET to allow such deployments. Although the Commission is proposing to examine whether to

expand Part 74 licensing eligibility to additional categories of large venues, it has not yet done so and it is possible that there will continue to be large productions or events that do not qualify for licensing and that will have to occur on an unlicensed basis. Given that the Commission is proposing to delegate waiver authority to OET to allow unlicensed WADs to operate at power levels in excess of 50 mW where it is in the public interest, this waiver authority should also include express authorization for OET to permit via its STA procedures the attachment of after market amplification in appropriate circumstances.

IV. EXPANSION OF PART 74 ELIGIBILITY AND PART 90 REVISIONS

The Commission has requested comment on whether to expand licensing eligibility under Part 74 of its rules, which currently limit eligibility to broadcasters, cable companies, motion picture producers and similar entities. The Commission requests comment on what other types of entities might qualify for eligibility, noting the irony that live music and sports performances, political events and live religious services do not qualify for Part 74 protection regardless of their size, scope or importance if those events are not otherwise being simultaneously broadcast or recorded for later broadcast, cablecast or film production.

A-T fully supports the proposal to expand licensing eligibility for wireless microphone users. There is a legitimate need for and public interest in ensuring that many cultural, political, educational and sporting activities that depend on wireless microphones are able to operate free from interference by other unlicensed wireless devices, including unlicensed wireless microphones, that are and will in the future be authorized to operate in some of the same frequency bands as licensed services. However, A-T is concerned that in determining who

would qualify for a Part 74 license, using the size of an organization or type of application could potentially rule out needed protection for other legitimate and already-established uses of wireless microphones in the audio infrastructure of the country. Accordingly, the Commission should consider expanding Part 74 licensing eligibility beyond those entities that are currently eligible to include those additional categories of entities that would be eligible for wireless microphone licensing under the eligibility criteria contained in current Part 90. In effect, this would expand Part 74 eligibility to include commercial enterprises (such as trade shows, exhibitions, theatrical productions, sporting events, etc.), non-profit organizations, educational institutions and houses of worship.

The proposal to expand licensing eligibility could be accomplished in one of several ways. Either Part 74 could be amended to expand licensing eligibility by adding the existing Part 90 eligibility categories to Part 74 or Part 90 could be revised to expand the number of frequencies available for Part 90 licensing to include the core television channels. The advantage of either of these approaches is that licensing eligibility will not be expanded beyond what the rules currently allow. However, this approach also addresses one of the main reasons that Part 90 licensing has been underutilized to date and would for the first time allow the broader licensing eligibility under Part 90 to become marketplace reality.⁵

⁵ A-T recognizes that Part 90 bandwidth limitations can constrain the performance capabilities of wireless microphone in cases where the application requires premium professional audio quality, such as recording or musical performances. However, in a multitude of applications where premium professional audio quality is not needed (*e.g.*, religious services, educational institutions, sporting events, business seminars, etc.), wireless microphones operating pursuant to Part 90 technical limitations are perfectly capable of meeting user needs.

The Commission has specifically requested comment on steps it should take to revise its Part 90 wireless microphone rules to make them more useful to wireless microphone users. In particular, the Commission has requested comment on why relatively few entities operate under the current Part 90 rules. As indicated above, A-T manufactures wireless microphone products that operate on frequencies currently available for use under Part 90. These product lines are the product lines that A-T sells through mass market retailers.

Since many users do not require premium professional audio quality in connection with their wireless microphone applications, the main impediment to wireless microphone use under Part 90 has been the limited number of channels available for wireless microphone use. Under Part 90 the Commission has made only 8 specific frequencies available for licensing. The current frequency assignments are such that an end user can only use 3 simultaneous (sometimes 4) channels due to intermodulation products. However, many typical wireless microphone applications require a minimum of 6 channels. A-T believes that if certain frequency offsets were permitted to the existing Part 90 channel assignments, this alone without any other changes might allow Part 90 users to squeeze out an additional two or three channels making Part 90 products a viable alternative for a substantially greater number of end users than is currently the case.

Frequency offsets, while helpful, would still not address the problem of large scale events that require the deployment of wireless microphone systems using more than six channels. However, if Part 90 licensees were able to share spectrum with Part 74 licensees, this would address the main impediment that has retarded Part 90 licensing for wireless microphones. At the same time, this proposal would not result the mass licensing of every existing and future

wireless microphone deployment. For most smaller and mid-sized applications, the complexities and costs of the FCC's licensing process, database registration and frequency coordination requirements will result in many users electing to operate on an unlicensed basis under Part 15, including some users that might otherwise meet licensing eligibility requirements. However, where the social and economic value of a particular application warrants the investment in licensing, that licensing protection should be available even though the number of wireless microphones is not comparatively large or the size of the organization is small.

For these reasons, A-T does not support strict numerical limits on applicant size or the number of microphone channels deployed as gating criteria for license eligibility. The Commission and white spaces device manufacturers should be less concerned with the number of licensed users and more concerned with ensuring that the licensing database is properly and professionally managed because the successful operation of multiple co-existing wireless devices in the RF environment will depend heavily on a thorough definition, evaluation, validation and impartial administration of a "TV bands database" system. To the extent that the Commission decides to adopt licensing eligibility criteria based on size or number of microphones deployed it should also make clear that, under its delegated waiver authority, the OET will have the discretion to require Part 74 protection and database access be afforded to entities that do not meet the gating criteria where such protection would serve the public interest.

V. CONCLUSION

Based on the foregoing, A-T respectfully requests that the Commission authorize unlicensed wireless microphone use under Part 15 of its rules on a permanent basis; adopt part 74 technical standards as they presently exist for wireless microphones authorized to operate under Part 15 at power levels not to exceed 50 mW; adopt reasonable labeling and disclosure requirements for Part 15 and Part 74 devices as part of the equipment certification process; and expand Part 74 licensing eligibility to include the categories of wireless microphone users that are eligible for licensing under Part 90 of the Commission's rules.

Respectfully submitted,

AUDIO-TECHNICA U.S., INC.

By: 

Jacquelyn A. Green
V.P. R&D/Engineering
Audio-Technica U.S., Inc.
1221 Commerce Dr.
Stow, OH 44224
(330) 686-2600

By: 

Howard S. Shapiro
Bennet & Bennet, PLLC
4350 East West Highway, Suite 201
Bethesda, MD 20814
202-37-1500
Its Attorneys

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